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THE COMMON USTILAGO OF MAIZE.

MUCH diversity of usage obtains in writing the name of the common smut of Indian corn (maize). Probably *Ustilago Maydis* Cda. is the form that has been oftenest employed. Since the appearance of Winter's revised edition of Rabenhorst's *Kryptogamen-Flora von Deutschland* in 1881 the form introduced there by the editor, *U. Zeæ-Mays* (DC.) Wint., has been much in favor. The last change to which the purists have given adherence is the form derived by Magnus,[1] and published in 1895. After going over the ground carefully he decided that the name should be *U. Mays-Zeæ* (DC.) Magn.

For some time past the botanical department of the Indiana Experiment Station has been studying some economic features of the smut disease of corn, and incidentally looked into the history of the Latin name of the parasite. As the conclusion attained does not agree with that of previous writers, but brings forward another variation on the name, it is thought best to publish the name adopted and a brief synonymy in advance of the bulletin on the general subject, which is now in course of preparation. The writer's assistant, Mr. William Stuart, is entitled to much credit for carefully going over the accessible literature. He had arrived at the same conclusion as Professor Magnus a short time before the latter's article on the subject appeared. Since then it has been my good fortune to obtain access to other works in the libraries of the British Museum and the University of Bonn, which materially change the result.

For some reason not very apparent Winter adopted a name, in other instances as well as in this, which one may assume might have been used by the author cited, but was not. By reference to Lamarck and De Candolle's work, at the place cited by Winter for his name,[2] we find under *Uredo segetum* the hosts mentioned thus: "*In glumis et fructibus hordei, tritici, avenæ, panici miliaci, agrostidis pumilæ, caricis, mays zeæ;*" and on this Winter founded the name. De Candolle does not appear to have ever written "Uredo Zeæ-Mays," as asserted by Winter. There is, however, an earlier name, which conforms to the present

usage in regard to the requirement for publication. The name with its principal synonymy may be written as follows:

USTILAGO ZEÆ (*Beckm.*) *Unger.*

1768. *Lycoperdon Zeæ* Beckm. Hannov. Mag. **6**: 1330.
1805. *Uredo segetum Mays-Zeæ* DC. Fl. franç. **2**: 596.
1815. *Uredo Maydis* DC. Fl. franç. **6**: 77.
1825. *Cœoma Zeæ* Lk. Sp. plant. **2**: 2.
1836. *Ustilago Zeæ* Ung. Einfluss des Bodens 211.
1881. *Ustilago Zeæ-Mays* Wint. Krypt.-Fl. **1**: 97.

It is not my purpose to trace the history of the synonyms, but it may be said in passing that Bonnet,[3] Tillet,[4] Aymen,[5] and Imhof[6] do not employ a Latin name for the parasite in their writings, although they are sometimes so quoted. A still earlier work by Planer,[7] occasionally cited in this connection, contains no reference to this disease, or to the fungus, neither does the oft cited work by Tessier[8] on diseases of grain.

Johann Beckmann, the authority for the specific name as given above, was professor of the science of economics at the University of Göttingen, and author of many learned treatises. When Tillet's admirable account of the new and striking disease of maize appeared in the memoirs of the Royal Academy of Paris, he translated the whole article and published it in the *Hannoverisches Magazin*, signing only his initials, "J. B.," on the right side of the page, and the initial of his address, "G.," on the left side. He has in consequence been referred to by the brothers Tulasne and others as an anonymous writer, who signed himself *J. B.*

Tillet's account of the disease includes a good and unmistakable description of the gross appearance of the fungus, in which he says that its last effect is to convert the excrescence into a black dust, very similar to that which issues from a Lycoperdon, or puff ball.[9] In a footnote to the translation Beckmann has given his opinion that the fungus is a parasitic species of Lycoperdon, and proposes a name in

[1] Deutsche bot. Monatsschrift **13**: 50.
[2] Syn. plant. Gall. 47. 1806.
[3] Rech. usag. feuill. 327. 1754.
[4] Acad. Roy. Sci. Hist. **1760**: 85, and Mém. **1760**: 254. Paris, 1766.
[5] Acad. Roy. Sci. Sav. étrang. **3**: 68. Paris, 1760. *Ibid.* **4**: 358. Paris, 1763.
[6] Zeæ maydis morb. ad ust. 1784.
[7] Ustilag. frumenti. Diss. Tübingen, 1709.
[8] Traité mal. grains. Paris. 1783.

accordance with this view.[10] In assigning it to the genus Lycoperdon he was following the custom of certain good botanists of the day and many years following.[11] To be sure he subsequently decided, upon reading Imhof's researches, that he was mistaken in considering it a parasitic puff ball, and so states in his deservedly popular treatise on German agriculture.[12] Although the author's opinions regarding the relationship of the fungus were not well founded, yet the name was happily and properly conceived and published, and meets the full requirements of present nomenclatural rules.—J. C. ARTHUR, *Lafayette, Ind.*

[9] "Son dernier effet consiste à convertïr cette excroissance en une poussière noirâtre et assez semblable à celle qui sort du *lycoperaon* ou *vesse de loupe*." l. c. 256.

[10] "Meiner Meynung nach, ist das hier beschriebene Gewächs allerdings ein Staubschwamm (*Lycoperdon*) und zwar eine *Species parasitica*, deren in *Lin. Syst. nat.* schon drey befindlich sind, unter welchen also dieser Art, etwa unter dem Namen *Lycoper. zeæ* ein Platz anzuweisen wäre." l. c. 1330.

[11] *Cf.* Schrank, Floræ Salisb., 1792, who places the smut of wheat and oats, and some other equally distantly related fungi under Lycoperdon, along with *L. Bovista*, a true puff ball.

[12] "Einer besondern Krankheit is der Mays in Frankreich und der Schweitz ausgesetzt, da nämlich aus verschiedenen Theilen der Pflanze, vornehmlich auf den Aehren, schadliche auswuchse entstehen, welche ich ehemals für Staubschwämme (*Lycoperdon*) gehalten habe. Aber diese Meinung scheint durch die Beobachtungen widerlegt zu werden, die man in *F. I. Imhof diss. de zeæ maydis morbo ad ustilaginem vulgo relato. Argentorati.* 1784. lieset." Grundsätze der deutschen Landwirthschaft 146. Göttingen, 1790 [ed. 4].—190. 1806 [ed. 6]. The other editions of this work I have not seen.